Trout Lake Boreal Caribou Study Progress Report, February 2005

By N.C. Larter & D.G. Allaire
Resources, Wildlife & Economic Development, Fort Simpson

Background

In response to the new federal Species at Risk Legislation and following extensive consultations with the Sambaa K'e Dene Band (SKDB) membership of Trout Lake, the Department of Resources, Wildlife & Economic Development - Dehcho Region initiated an ecological study of boreal caribou in the Trout Lake area (Fig. 1). There was limited scientific knowledge about boreal caribou in the area. Also, SKDB saw the benefits of combining information from this study with their own traditional knowledge study because it could provide information to fill areas where there were gaps in traditional information. This ecological study involved the deployment of satellite radio collars on female boreal caribou in order to document seasonal range use, seasonal movements, calving areas and calving time, fidelity of range use and seasonal movements over a 4-5 year period. Collared females would also be used to provide information on calf production, calf survival, and adult female survival. This study would be one of a number of ecological studies being conducted on boreal caribou in other regions of the Northwest Territories to increase our knowledge of boreal caribou so that in the face of increasing development pressures informed decisions regarding land use could be made.

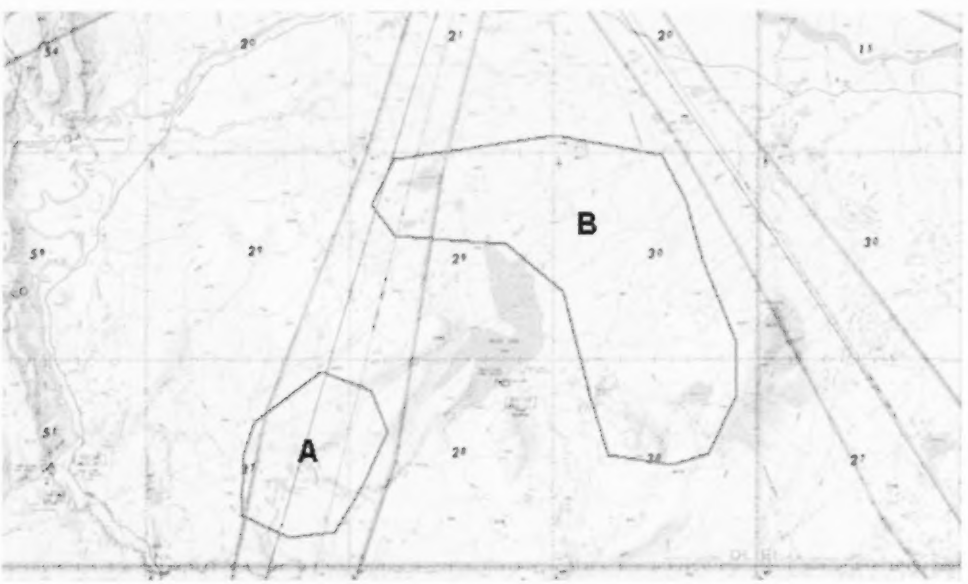

Figure 1. The 2 main areas planned for collar deployment. Caribou distribution was restricted resulting in deployment being limited to area A.

Satellite Collar Descriptions and Deployment

The satellite collars were designed to provide as much location data as possible over a minimum 4-year period. We deployed ST-20 collars, manufactured by Telonics, on 10 adult female boreal caribou. The collars were designed to remain on the animal after the study period and were the preferred teardrop design with both a satellite and a VHF transmitting beacon (see Fig. 2). The collars would begin satellite transmissions on 1 May 2004. They had a duty cycle that provided satellite locations daily during the 1 May to 14 June period and provided satellite locations once every 3 days for the remainder of the year. The VHF beacons were not duty cycled permitting relocations throughout the duration of the study.

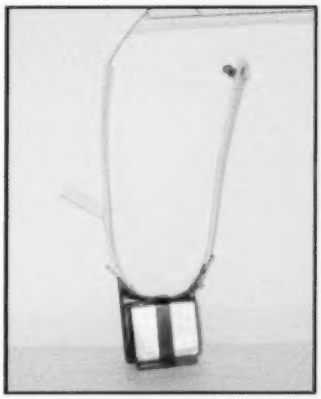

Figure 2. Telonics ST-20 satellite collar.

Caribou were captured by net-gunning them from a helicopter. RWED contracted a professional net-gunning crew to do the work. The crew had to follow strict animal care guidelines during the operation. Blood and fecal samples and an ear plug were collected from each captured animal as long as the opportunity presented itself. Handling times were kept to a minimum. Immediately prior to the deployment of the satellite collars we flew reconnaissance surveys in fixed-wing aircraft to determine the distribution of animals that would be available for collaring and to direct the operation in as efficient a manner as possible. Unfortunately, severe ice crusting of the snow resulted in restricted caribou distribution in late-March 2004. Most animals were found around the Celibeta Lake area (Fig. 1 area A), and hence all 10 collars were deployed on adult female caribou in that area between 29 March and 1 April. Three animals were collared on 29 and 30 March with the final 4 animals being collared on 1 April.

Aerial Relocation Flights

Two annual aerial relocation flights were planned, one post-calving (late May-early June) and one in late fall (late-September). These flights were made so that we could determine how many female caribou had calves and whether the calves survived through the fall. Additional flights would be conducted if and when we had indication that collars were stationary for an extended period of time or there were indications of collar malfunction. These additional flights were also dependent upon aircraft availability. We conducted the first relocation flight on 29 May, 2004 using a Cessna 172. A second flight was made on 3 June, 2004 with an A-Star helicopter. This flight was to investigate what appeared to be a downed collar and was not intended as a flight to relocate all collared animals. The remains of a caribou were located and the collar was retrieved. On 22 September, 2004 using a Cessana 172 we conducted our late-fall relocation flight. Another flight, using a Bell 206B helicopter was made on 25 January, 2005 to investigate a malfunctioning collar; 4 collared caribou were relocated during this flight.

Preliminary Findings

We discovered just how elusive boreal caribou were especially in the snow free seasons. Even before leafout and after leafdrop caribou were extremely difficult to get positive observations from the aircraft. It was only during winter that we had a 100% success rate of observing all collared animals that we were searching for using the VHF telemetry equipment. Because we did not observe every collared female during the May, June, and September flights we have limited information on calf production and survival through the summer.

We lost two collared caribou during the first year of the study; one was 14 years old based upon cementum analysis of a tooth that was retrieved from the carcass. An analysis of the satellite locations indicates that both animals died during May. A study of boreal caribou in the Cameron Hills area, immediately to the east of the Trout Lake study area, has indicated that most adult female mortality occurs during May-June (D. Johnson pers. comm.). We managed to locate and retrieve the collars from both mortalities, one during the 3 June flight and the other on 9 August when EnCana kindly provided RWED with helicopter time for an afternoon. The evidence found on the ground at both sites strongly indicated that these caribou had been predated upon by wolves.

There was no indication of a common calving area for female boreal caribou. Contrastingly, all collared females were widely dispersed throughout the area during calving and were found either alone (with or without calf) or with another female (with or without calf). Daily movements were relatively restricted during the

calving period. These findings are strikingly similar to those reported for a boreal caribou study in the Inuvik region (Nagy et al 2005). We found that movements were relatively restricted throughout the snow free season; this is based upon location information once every 3 days. By fall there was an indication of modestly increasing group size; the largest group observed was 7 animals. Movements dramatically increased in both direction and distance during winter based upon location information every 3 days. It was not unusual for minimum straight line distances between locations to be up to 20km. At least 2 animals spent part of the winter as much as 20km south of the Northwest Territories-British Columbia border. Group size also was at its largest during winter; the largest group observed was 13 animals. The seasonal changes in group size we found are similar to those reported for boreal caribou in the Inuvik region (Nagy et al. 2005). Collared females made movements in and out of groups during winter. Based upon 10 months of data and approximately 120 locations per currently collared female boreal caribou, the average range is about 900km^2 (using the minimum convex polygon estimator). The average range size we report is similar to that reported from the Cameron Hills area (D. Johnson pers. comm.), but smaller than that reported for the Inuvik region (Nagy et al. 2005).

Refernces

Nagy JA, Aurait A, Wright W, Slack T, Ellsworth I, Kienzler M. 2005. Ecology of boreal woodland caribou in the Lower Mackenzie Valley, NT: April 2003-November 2004.

Table 1. The status of the 10 female boreal caribou based upon relocation flights since collar deployment to 25 January, 2005. The number indicated is the group size, calves present or absent from heel are identified. Animal relocation but with no visual are listed. Those animals not checked on some flights are indicated.

ID #	Deployment	29 May	3 June	22 September	25 January
100	29 March	3 no calf	1 no calf	No visual	11 no calf
101	30 March	Mortality			
102	29 March	Mortality			
103	1 April	2 with calf	Unchecked	No visual	Unchecked
104	29 March	3 no calf	3 no calf	No visual	Unchecked
105	30 March	2 with calf	Unchecked	No visual	3 no calf
106	30 March	No visual	2 with calf	7 no calf	5 no calf
107	1 April	No visual	Unchecked	3 with calf	Unchecked
108	1 April	1 no calf	No visual	3 no calf	4 no calf
109	1 April	No visual	Unchecked	4 no calf	Unchecked

Figure 3. Collar deployment locations for 10 collared female boreal caribou.

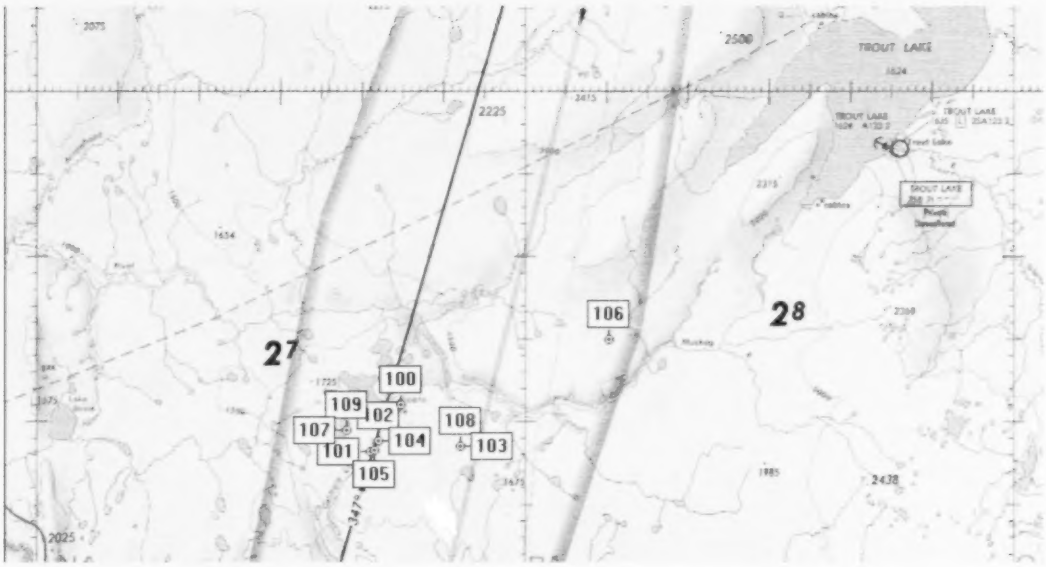

Figure 4. The minimum convex polygon estimation of the ranges used by 8 boreal female caribou from May 2004 – January 2005 based upon 115-120 locations.